
CURRICULUM VITAE: Erica R. Siirila-Woodburn

CONTACT INFORMATION

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Earth Sciences Division
Lawrence Berkeley National Laboratory
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EDUCATION

Ph.D. 2013 Colorado School of Mines, Golden, CO, USA
Hydrologic Science and Engineering

M.S. 2010 Colorado School of Mines, Golden, CO, USA
Hydrologic Science and Engineering

B.A. 2009 University of Colorado, Boulder, CO, USA
Geology

PROFESSIONAL EXPERIENCE

Jan. 2015 – Present	Postdoctoral Fellow Lawrence Berkeley National Laboratory
July 2013 – Jan. 2015	Postdoctoral Researcher Universitat Politècnica de Catalunya
Aug. 2012 – May 2013	Instructor Colorado School of Mines ESGN 501 – Risk Assessment ESGN 522 – Subsurface Contaminant Transport
Aug. 2011 – Dec. 2011	Teaching Assistant Colorado School of Mines ESGN 501 – Risk Assessment

Jan. 2010 – May 2013 Research Assistant
Colorado School of Mines

TEACHING EXPERIENCE

Spring 2013	Instructor Colorado School of Mines ESGN 522 Subsurface Contaminant Transport, 3 credits (24 students)
Fall 2012	Instructor Colorado School of Mines ESGN 501 Environmental Risk Analysis, 3 credits (19 students)
Fall 2011	Teaching Assistant Colorado School of Mines ESGN 501 Environmental Risk Analysis, 3 credits (13 students)

PUBLICATIONS

Peer-reviewed Journal Articles

- [7] **Siirila-Woodburn, E.R.**, Fernàndez-Garcia, D., Sanchez-Vila, X. (2015). “Improving the accuracy of risk prediction from particle-based breakthrough curves reconstructed with kernel density estimators.” *Accepted, Water Resou Res*
- [6] **Siirila-Woodburn, E.R.**, Sanchez-Vila, X., Fernàndez-Garcia, D. (2015). “On the formation of multiple local peaks in breakthrough curves.” *Water Resou Res*, **51**, doi:10.1002/2014WR015840.
- [5] **Siirila-Woodburn, E.R.** and Maxwell, R.M. (2015). “A heterogeneity model comparison of highly resolved statistically anisotropic aquifers.” *Adv Water Resour*, **75**, 53-66. doi:10.1016/j.advwatres.2014.10.011.
- [4] Navarre-Sitchler, A.K., Maxwell, R.M., **Siirila, E.R.**, Hammond, G.E., and Lichtner, P.C. (2013). “Elucidating geochemical response of shallow heterogeneous aquifers to CO₂ leakage using high-performance computing: implications for monitoring of CO₂ sequestration.” *Adv Water Resour*, **53**, 45-55. doi:10.1016/j.advwatres.2012.10.005.

- [3] **Siirila, E.R.** and Maxwell, R.M. (2012). “A new perspective on human health risk assessment: Development of a time dependent methodology and the effect of varying exposure durations.” Sci Total Environ. **431**:221-232.
doi:10.1016/j.scitotenv.2012.05.030.
- [2] **Siirila, E.R.** and Maxwell, R.M. (2012). “Evaluating effective reaction rates of kinetically driven solutes in large-scale, statistically anisotropic media: human health risk implications.” Water Resour Res **48**(4):W04527.
doi:10.1029/2011WR011516.
- [1] **Siirila, E.R.**, Navarre-Sitchler, A.K., Maxwell, R.M., and McCray, J.M. (2012). “A quantitative methodology to assess the risks to human health from CO₂ leakage into groundwater.” Adv Water Resour. **36**.
doi:10.1016/j.advwatres.2010.11.005.

Conference Proceedings Articles

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. PSAM 11 & ESREL 2012 Conference, Helsinki, Finland, 25-29 June, 2012.

Siirila, E.R. and Maxwell, R.M. Evaluating effective reaction rates of kinetically driven solutes in large-scale, statistically anisotropic media: implications of pore scale mixing and preferential flow pathways at the field scale. 2012 CMWR International Conference, Urbana-Champaign, IL, 17-21 June, 2012.

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. MODEL CARE Conference, Leipzig, Germany, 18-22 September, 2011.

Atchley, A.L., **Siirila, E.R.**, Maxwell, R.M. Navarre-Sitchler, A.K., McCray, J.E. Using streamlines for highly-resolved reactive transport for CO₂ risk assessment simulations. MODEL CARE Conference, Leipzig, Germany, 18-22 September, 2011.

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. 2011 MODFLOW and More Conference, Golden, CO, 5-8 June, 2011.

Atchley, A.L., **Siirila, E.R.**, Maxwell, R.M., Navarre-Sitchler, A.K., McCray, J.E. Using streamlines for highly-resolved, reactive transport for CO₂ risk assessment simulations. 2011 MODFLOW and More Conference, Golden, CO, 5-8 June, 2011.

Siirila, E.R. (2013). *On the interplay between scaling small-scale reactions, mixing, and aquifer heterogeneity: human health risk implications*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. Publication Order No. 3557908.

Siirila, E.R. (2010). *A quantitative methodology to assess the human health risks from CO₂ leakage into groundwater*. (Master's thesis). Retrieved from ProQuest Dissertations and Theses. Accession Order No. 2012-017809.

CONFERENCE PRESENTATIONS (WITH ABSTRACTS)

Siirila, E.R., Fernàndez-Garcia, D. Sanchez-Vila, X. The use of kernel density estimators in breakthrough curve reconstruction and advantages in risk analysis. 2014 Fall Meeting, AGU, San Francisco, CA, 15-19 Dec, 2014.

Siirila, E.R., Sanchez-Vila, X., Fernàndez-Garcia, D. On the non-monotonicity and localized peaks of breakthrough curves. 7th IAHR International Groundwater Symposium, Perugia, Italy, 22-24 Sept, 2014. (*Invited key-note*)

Siirila, E.R., Sanchez-Vila, X., Fernàndez-Garcia, D. On the non-monotonicity and localized peaks of breakthrough curves. 2014 CMWR International Conference, Stuttgart, Germany, 10-13 June, 2014.

Siirila, E.R., Sanchez-Vila, X., Fernàndez-Garcia, D. On the non-monotonicity and localized peaks of breakthrough curves. 2014 Meeting, EGU, Vienna, Austria, 28 April-2 May, 2014.

Siirila, E.R. and Maxwell, R.M. Propagating uncertainty from hydrology into human health risk assessment. 2013 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec, 2013.

Siirila, E.R. and Maxwell, R.M. Interplay between local and macro dispersive processes resulting from different modeling approaches of aquifer heterogeneity. 2012 Fall Meeting, AGU, San Francisco, CA, 3-7 Dec, 2012.

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. PSAM 11 & ESREL 2012 Conference, Helsinki, Finland, 25-29 June, 2012.

Siirila, E.R. and Maxwell, R.M. Evaluating effective reaction rates of kinetically driven solutes in large-scale, statistically anisotropic medial: implications of pore scale mixing and preferential flow pathways at the field scale. 2012 CMWR International Conference, Urbana-Champaign, IL, 17-21 June, 2012.

Siirila, E.R. and Maxwell, R.M. The effect of macro-kinetic solutes on human health risk with time-dependent exposure. 2012 CMWR International Conference, Urbana-Champaign, IL, 17-21 June, 2012.

Siirila, E.R. and Maxwell, R.M., Evaluating effective reaction rates of kinetically driven solutes in large-scale, anisotropic media: human health risk implications in CO₂ leakage, Abstract H21C-1118. 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec, 2011.

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. MODEL CARE Conference, Leipzig, Germany, 18-22 Sept, 2011.

Atchley, A.L., **Siirila, E.R.**, Maxwell, R.M. Navarre-Sitchler, A.K., McCray, J.E. Using streamlines for highly-resolved reactive transport for CO₂ risk assessment simulations. MODEL CARE Conference, Leipzig, Germany, 18-22 September, 2011.

Siirila, E.R. and Maxwell, R.M. Effective reaction rates of kinetically driven solutes in large-scale, heterogeneous domains: human health risk implications. 2011 MODFLOW and More Conference, Golden, CO, 5-8 June, 2011.

Siirila, E.R., Navarre-Sitchler, A.K., Maxwell, R.M., Bearup, L.A. and McCray, J.E. A quantitative methodology to assess the risks to human health from CO₂ leakage into groundwater: implications of scaling reaction rates. 10th Annual Carbon Capture and Sequestration Conference, Pittsburgh, PA, May, 2011.

Siirila, E.R., Navarre-Sitchler, A.K., Maxwell, R.M. and McCray, J.E., A quantitative methodology to assess the risks to human health from CO₂ leakage into groundwater, Abstract H53E-1078. 2010 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec, 2010.

Siirila, E.R., Navarre-Sitchler, A.K., Maxwell, R.M., McCray, J.E. A quantitative methodology to assess the risks to human health from CO₂ leakage into groundwater. Geological Society of America, Denver, CO, Oct, 2010.

Atchley, A.L., **Siirila, E.R.**, Navarre-Sitchler, A.K., Maxwell, R.M., McCray, J.E. Improving the assessment of Carbon Capture and Storage risk analysis by proper representation of hydraulic conductivity and dispersive properties. Geological Society of America, Denver, CO, Oct, 2010.

Siirila, E.R., Navarre-Sitchler, A.K., Maxwell, R.M., McCray, J.E. A quantitative methodology to assess the risks to human health from CO₂ leakage into groundwater. Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI) Inc., Boulder, CO, July, 2010.

Maxwell, R.M., **Siirila, E.R.**, Wunsch, A., Peters, L., Atchley, A., Navarre-Sitchler, A.K. and McCray, J. A quantitative methodology to assess the risks to human health from CO₂

leakage into groundwater. 2010 Carbon Capture & Sequestration Conference, Simulation and Risk Assessment session, Pittsburgh PA, 23-25 March, 2010.

McCray, J., Navarre-Sitchler, A.K., Peters, L., **Siirila, E.R.**, Mouzakis, K., Wunsch, A. and Maxwell, R.M. Identifying Aquifers Susceptible to Impacts from CO₂ leakage, 2010 Carbon Capture & Sequestration Conference, Simulation and Risk Assessment session, Pittsburgh PA, 23-25 March, 2010.

PROFESSIONAL ACTIVITIES

- Journal Reviewer: *Advances in Water Resources*, *Environmental Research*, *Environmental Science and Technology*, *Vadose Zone Journal*, *Water Resources Research*
- Member: American Geophysical Union, European Geophysical Union, Geological Society of America

ACADEMIC ACHIEVEMENTS AND AWARDS

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| 2014 | <i>Advances in Water Resources</i> #1 Top Cited Paper 2012-2013: “A quantitative methodology to assess the risks to human health from CO ₂ leakage into groundwater” |
| 2013 | Student Teaching Fellowship, Colorado School of Mines Hydrologic Science and Engineering Program, Golden CO |
| 2012 | First place oral presentation, Carbon Capture and Storage (CCS) Symposium at the Colorado School of Mines, Golden CO |
| 2010-11 | Outstanding M.S. Student Award, Colorado School of Mines Hydrologic Science and Engineering Program, Golden CO |
| 2005 | Multicultural Engineering Program (MEP) Scholarship, University of Colorado, Boulder, CO |